

A NEW VARIETAL COMBINATION, TYPIIFICATION, AND NOMENCLATURAL COMMENTS IN THE NYCTAGINACEAE FOR THE INTERMOUNTAIN FLORA

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ABSTRACT

Miscellaneous comments regarding nomenclature and typification are made for the Nyctaginaceae of the Intermountain region of the western United States. ***Tripterocalyx carneus*** (Greene) Galloway var. ***pedunculatus*** (M.E. Jones) Spellenb. is presented as a new combination. *Abronia crux-maltae* Kellogg is neotypified. *Boerhavia spicata* Choisy var. *torreyana* S. Wats. and *Oxybaphus glaber* S. Wats. are lectotypified. The inadvertent lectotypifications by past workers of *Abronia bakeri* Greene, *Ab. robusta* Standl., *Allionia glandulifera* A. Nels., and *Al. incarnata* L. var. *glabra* Choisy in DC. are discussed. The widespread and variable *Allionia incarnata* L. needs a neotype.

RESUMEN

Se hacen varias observaciones con respecto a la nomenclatura y tipificación de las Nyctaginaceae de la región intermontana del oeste de los Estados Unidos. ***Tripterocalyx carneus*** (Greene) Galloway var. ***pedunculatus*** (M.E. Jones) Spellenb. Se presenta como una combinación nueva. *Abronia crux-maltae* Kellogg que se neotipifica. Se lectotipifican *Boerhavia spicata* Choisy var. *torreyana* S. Wats. y *Oxybaphus glaber* S. Wats.. Las lectotipificaciones inadvertidas por taxónomos en tratamientos taxonómicos anteriores de *Abronia bakeri* Greene, *Ab. robusta* Standl., *Allionia glandulifera* A. Nels., y *Al. incarnata* L. var. *glabra* Choisy in DC. se discuten. *Allionia incarnata* L. muy difundida y variable, necesita un neotipo.

The final volume, vol. 2A, of the Intermountain Flora now largely in preparation by Noel and Pat Holmgren of the New York Botanical Garden will have a treatment by me for the Nyctaginaceae for the region. This area encompasses all of Utah, most of Nevada, and parts of some of the adjacent states. In the course of preparing that work, I have here selected neo- or lectotypes for some names that mostly apply to plants within the Intermountain region, have provided one new nomenclatural combination, and included some notes on other problems in typification, particularly noting inadvertent lectotypifications.

A NEW VARIETAL COMBINATION

Tripterocalyx carneus (Greene) Galloway var. ***pedunculatus*** (M.E. Jones) Spellenb., comb. nov. *Tripterocalyx micranthus* (Torr.) Hook. var. *pedunculatus* M.E. Jones. Proc. Calif. Acad. Sci. ser. 2, 5:716. 1895. TYPE: UTAH. WASHINGTON CO.: St. George, 2700 ft, 26 Apr 1894, M.E. Jones 5101 (LECTOTYPE: US!, inadvertently lectotypified in Galloway, Brittonia 27:335. 1976 ("1975"). His date 1844 [for 1894] is a typographical error.).

Mayr (1969) warned of using low weight regressive characters to define taxa. Such apparently has happened in *Tripterocalyx*, where the reduced, whitish green perianth (7–18 mm) has been largely used to define *Tripterocalyx micranthus* (Torr.) Hook. *sensu lato* relative to other taxa in the genus, particularly *T. carneus* (perianth [18–]25–29 mm). The reduction of size and coloration in the perianth likely has been in response to increased autogamy. Douglas (2008) showed that at least one population of the large-flowered *T. carneus*, well to the south of the small-flowered forms, is self-compatible and probably capable of autogamy. Throughout the range of large-flowered *T. carneus* are occasional small-flowered variants. Thus, reduction of perianth length in response to vagaries in pollination may be easily accomplished.

As interpreted here, in the northern part of its range *Tripterocalyx carneus* enters into a more or less abrupt reduction in perianth length. More northern populations have shorter flowers relative to southern populations. This occurs primarily in northeastern Arizona, southern Utah, and southwestern Colorado through the phase that has been called *T. wootonii* Standl. as delimited by Galloway (2003). Even farther north, the small flowered plants have been called *T. micranthus* (Galloway 2003). Early on M.E. Jones noted

these plants to be different, distinguishing them as the *T. micranthus* var. *pedunculatus* M.E. Jones. In fruit these northern plants are indistinguishable or distinguished only with difficulty from *T. carneus* to the south, but are readily distinguishable from *T. micranthus* (*sensu stricto*), which occurs to the east, as follows:

1. Fruit body papery-spongy (can be easily scraped and broken with a needle), the spongy tissue \pm obscuring the ribs _____ ***T. micranthus***
2. Fruit body indurate (not easily damaged by scraping with needle), ribs prominent _____ ***T. carneus* var. *pedunculatus***

The two deceptively similar taxa have nearly separate geographic ranges. *Tripterocalyx micranthus* is a taxon primarily of the western Great Plains, barely reaching northeastern and central-eastern Utah. *Tripterocalyx carneus* var. *pedunculatus* is a taxon of the arid Intermountain Region, from sw. and wc. Utah to eastern Utah, sw. Colorado, and ne. Arizona. The two are closely adjacent or sympatric in Uintah and Grand cos., Utah.

NEOTYPES AND LECTOTYPES

Abronia crux-maltae Kellogg, Proc. Calif. Acad. Sci. 2:71, fig. 16. 1863. TYPE: NEVADA. ORMSBY CO.: Eagle Valley, 0.2 road mi N of highway 50 on Centennial Drive then NE 0.1 mi along a pole line road, T15N, R20E, S2. 4700 ft, 39°11'45.7"N, 119°41'46.4"W, WGS-1984, growing with *Tetradymia canescens* on sand flats, flowers pink to white, 19 May 2008, Arnold Tiehm 15520 (NEOTYPE, here designated: CAS; ISONEOTYPES: ARIZ, ASC, B, BRIT, BRY, C, COLO, G, GH, ID, K, LE, NMC, MEXU, MO, MONTU, MT, NY, OSC, P, RENO, RM, RSA, TEX, UC, UNLV, UNM, US, UT, UTC, WTU, Z).

In 1863 Kellogg described a novel Nyctaginaceae brought to him from the Carson Valley, Nevada, by A. A. Veatch. He named the plant *Abronia crux-maltae* [now generally recognized as *Tripterocalyx crux-maltae* (Kellogg) Standl.] because the shape of perianth limb was reminiscent of a Maltese cross. He provided a thorough written description, contrasting the new species with *A. cycloptera* A. Gray (*nom. nud.*), noting the 4-merous perianth, but he included an erroneous illustration (fig. 16) that might be several other *Tripterocalyx* or *Abronia*, but which is incorrect for *T. crux-maltae*. This is a fairly crude line drawing of a stem with a flowering head bearing flowers with a 5-merous (or slightly greater) perianths blooming synchronously, as in *Abronia*. None of the perianths is drawn as 4-lobed, a characteristic of *T. crux-maltae*. The most distinctive feature of *T. crux-maltae*, the fruit, is not illustrated. He cited no specimen at the time, and one has not been found at CAS or elsewhere. Galloway (1975) observed "no type cited," and Tiehm (1996) stated "collector not named [type not extant]." Curran (1885) cited the name but listed no type; from other examples from this publication it is apparent that Kellogg might not have always made specimens or, if he did so, sometimes didn't keep them. If a type specimen ever did exist, it may have been destroyed in the 1906 San Francisco fire.

A neotype is here selected from a fine and ample collection made specifically for this purpose from the general vicinity of the Carson Valley.

Boerhavia spicata Choisy var. ***torreyana*** S. Watson, Proc. Amer. Acad. Arts 24:70. 1889. TYPE: TEXAS. PRESIDIO CO.: prairie near Marfa, W. Texas, Sep 1883, *Havard* 61 (LECTOTYPE, here designated: GH-HUH barcode 37323).
Notes.—This specimen was seen by Watson with sketches of the flower on the sheet. It has twice been anonymously annotated as "type." The taxon is now recognized at the species level by Spellenberg (2003) as proposed by Standley (1909, 1911, 1918).

Watson (1998) was discussing variation in *Boerhavia spicata* Choisy, within which he coined names for two varieties, *B. spicata* var. *palmeri* S. Wats. and *B. spicata* var. *torreyana*. Contrasting plants from the Southwest, Watson wrote (p. 70), "The form of Texas, New Mexico, and Arizona that has been referred to this species is usually more glandular than the var. *Palmeri*, the leaves thickish and scabrous, and the perianth about a line long. It may be distinguished as var. (?) *Torreyana*." These taxa have been discussed in Spellenberg (2002). Watson cited a type for the var. *palmeri*, but he did not for var. *torreyana*. In 1909 Standley raised the taxon to species level as *B. torreyana* (S. Wats.) Standl., noting that no type was cited. He also did not cite a type in later publications (1911, 1918). Reed (1969), who was consistent about citing types at least at US, treated the taxon as a synonym of *B. spicata*, and also cited no type.

Oxybaphus glaber S. Watson, Amer. Naturalist 7:302. 1873. TYPE: UTAH: Kanab, S Utah, "dry soil" [protologue], 1872. Mrs. Thompson s.n. (LECTOTYPE, here designated: US-22574).

Notes.—Two specimens at US, apparently prepared consecutively, are each dated differently, one 1872 (US 22754), the other 1873 (US 22573). Reed (1969) cited both the US specimens as “Type.” In 1993 Turner annotated US 22753 as the holotype of “*Allionia glabra* S. Wats,” the name actually *A. glabra* (S. Wats.) Kuntz, a later synonym. He never published this selection of a type (Turner, pers. com. 2009). As judged by phenology and habit, and the nature of the collection method, the two US specimens appear to be from the same gathering, the “1873” date an error in transcription on the label of the US 22573 specimen. To reduce confusion resulting from varying dates, I select US 22574, “Mrs. Thompson, 1872, S. Utah,” as the lectotype.

At GH there is a specimen with data written in Watson’s hand directly on the sheet as “*Qxybaphus glaber*, n. sp., Kanab – s. Utah, Mrs. A. [sic] P. Thompson [no date], which also appears to be from the same gathering. This is a probable isolectotype. An isolectotype is at NY!, and the 1873 specimen at US is considered a probable isolectotype.

When Watson was nearing the end of his tenure at US he described *O. glaber*, citing only the type collection, without date, and no specific holotype. Watson (1873), in the introduction to a series of new names, indicated the collections of Mrs. E.P. Thompson were made in the second summer of 1871–1872.

COMMENTS ON INADVERTENT LECTOTYPES

Occasionally authors cited specimens in taxonomic treatments that resulted in inadvertent lectotypification under current international rules of nomenclature. Those that I have encountered while working with the Intermountain Nyctaginaceae are reviewed here.

Abronia bakeri Greene (Pl. Baker. 3:32. 1901). Greene proposed the name *Abronia bakeri* for a sand verbena from western Colorado. In the description he cited three syntypes, *Baker* 13 from Montrose, *Baker* 89 from Deer Run, and *Baker* 92 from Grand Junction. He indicated no preference as to which might be a holotype in the publication or on the specimens at NDG. Galloway (1975, p. 343) placed *A. bakeri* in synonymy in *A. elliptica* A. Nelson (a disposition with which I concur), writing, “Type: Colorado. Grand Junction, 1,400 m, 11 Jun 1901, C. F. Baker 92 (MO 1746238!), inadvertently lectotypifying the name. Barbara Hellenthal (NDG) kindly examined the *Abronia bakeri* syntypes, and noted that the labels are written out in Greene’s hand; the labels of distributed specimens are in the hand of someone else. The specimens seen by Greene also have habitat information, whereas the distributed specimens do not. The NGD 15722! *Baker* 92 has added information, “borders of mesas,” and is an isolectotype.

Abronia robusta Standley (Contr. U.S. Natl. Herb. 12:324, plate 42. 1909). Beginning only a short time after its description, *A. robusta* has been considered a synonym of *A. fragrans* Nutt. (e.g., Standley 1918). In 1909 Standley, in commenting on his new species, wrote, “The type material in the herbarium of the Missouri Botanical garden consists of 4 sheets collected on sand hills near Monahans, Ward County, Texas, May 10, 1901, by H. Eggert.” Eggert’s collections were without collection number. Galloway (1975) cited MO 1746889 as the type, thereby lectotypifying the name (p. 345). James Solomon kindly checked the MO collection, and noted that MO 1746889, 1746890, 1746891 were all seen by Standley, these representing the lectotype and two isolectotypes. The fourth specimen alluded to by Standley is apparently a record-keeping error. Two other specimens at MO were annotated by him; an Eggert collection from near Colorado, Mitchell Co., Texas, 5 June 1900 (MO 1746888), and an Eggert specimen (annotated by Standley as *A. robusta* ?) from “Canadian, Texas,” 7 June 1901. Neither of these last two specimens, though of some historical curiosity, should be considered in typification of the name.

Allionia glandulifera A. Nelson (Bot. Gaz. 34: 364. 1902). Nelson (1902) described this species, gave a general range, and cited no specimens. Reed (1969) consistently cited US specimens as “type” when they were part of a type gathering, inadvertently lectotypifying many names that he placed in synonymy, as he did for this name (page 173), the “Type from sunny canyon, Head of Woods Creek, Albany Co., Wyoming, Aug. 10, 1900, A. Nelson 8048 (US-434056).” Isolectotypes are also at MO!, NY!, RM! The name is considered a synonym of *Mirabilis linearis* (Pursh) Heimerl var. *decipiens* (Standl.) Welsh.

Allionia incarnata L. var. **glabra** Choisy (in DC., Prodr. 13(2):435. 1849). This name is supported by two collections, “Circa Mexicum et ad S.-Fernando (Berlandier! Pl. mexic. exsicc. n. 577 et 2236).” Later Standley (1909) raised this to species level as *Wedelia glabra* (Choisy) Standl., transferring that name in 1930 to

Allionia glabra (Choisy) Standl., thereby creating a later homonym of *Allionia glabra* (S. Wats.) Kuntze. He immediately corrected this error, coining the name *A. choisyi* Standl. in 1931. This name has been applied to the taxon in the United States since that time.

In 1909 Standley inadvertently lectotypified *A. incarnata* var. *glabra*. In this discussion of the species he wrote (p. 332), "The description is based upon plants collected in the Mesilla Valley, New Mexico, which seem well to match portion of the type collection preserved in the Bernhardt Herbarium." Below he wrote under specimens examined, "MEXICO: Environs de Mexico (City), Berlandier, type collection; ..." He does not mention the San Fernando Collection. In the preface to his treatment (p. 304) he notes that he had the privilege of examining specimens from a number of major herbaria, among them "Missouri Botanical Garden, including the Engelmann and Bernhardt herbaria; ..." At MO is a specimen, #577, from the Bernhardt herbarium which Standley saw, annotated by him as "cotype," which by his explanation and citation in 1909 becomes a lectotype. In 1918 (p. 201) he further supports this selection of this specimen by noting the type locality of the species is "Near the City of Mexico, Mexico."

Turner (1994) lectotypified the species on Mexico, Tamaulipas, San Fernando, w/o date, *Berlandier* 816 (pl. exs. 2236), selecting G-DC as the lectotype, which he apparently did not see, and GH as an isotype, which he saw. Turner's lectotypification appears unnecessary.

NEED FOR A NEOTYPE

Allionia incarnata L. (Syst. Nat., ed. 10. 2: 890. 1759) needs a type. No type was specified for this name. Turner (1994) lectotypified *Allionia incarnata* by citing for the holotype *Loefling s.n.*, Sucre: near Cumana, Venezuela (LINN). Through communication with C. Jarvis (BM), who is involved with the Linnean typification project (<http://www.nhm.ac.uk/research-curation/research/projects/linnaean-typification/>), I learned that no such specimen exists. Loefling's material has apparently been lost. Thus, *Allionia incarnata* needs a neotype. Turner's map of the distributions of *A. incarnata* and *A. choisyi* Standl. in South America shows a lone station for *A. incarnata* near Cumana, and no other *Allionia* nearby except for a single locality for *A. choisyi* in Haiti. Both species are common in North America, plants resembling *A. choisyi* are found in the Caribbean region, including the northern coast of South America, and both species are again common from southern Peru and Bolivia southward.

North American herbaria that I have surveyed have insufficient material to select a representative neotype that is part of a widespread collection. I have no information from South American herbaria. From material that I have seen, all specimens from Venezuela (which are from the coastal region) would better fit the North American concept of *Allionia choisyi*. These plants have relatively low-convex fruits with several long, slender, and comparatively thin teeth. This also applies for all specimens I have seen from the Caribbean islands. The concept of widespread and variable *A. incarnata* as understood in North America may depend on a careful collecting effort around Cumana, Venezuela, in an effort that would attempt to determine the variation occurring at the type locality prior to the selection of a neotype.

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